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(FILE 'HOME' ENTERED AT 14:43:48 ON 03 JAN 2005)

FILE 'CA' ENTERED AT 14:44:11 ON 03 JAN 2005

L1 3566 S (NOX OR NO2 OR NITROGEN DIOXIDE) (5A) (CONVERT? OR CONVERSION? OR
REDUCTION OR REDUCE# OR REDUCING) (8A) (NITROGEN OXIDE OR NITROGEN MONOOXIDE
OR NITROGEN MONOXIDE OR NITRIC OXIDE OR "NO")
L2 649 S L1 AND (DEW OR WATER OR H2O OR MOISTURE OR DEWPOINT)
L3 308 S L2 AND (FLUE OR STACK OR EXHAUST)
L4 149 S L2 AND (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSESS? OR
ESTIMAT? OR EVALUAT? OR MEASUR? OR MONITOR? OR QUANTITAT? OR SENSOR OR
SENSING OR SENSE# OR QUANTIF?) (8A) (NOX OR NO2 OR NITROGEN DIOXIDE OR
NITROGEN OXIDE OR NITROGEN MONOOXIDE OR NITROGEN MONOXIDE OR NITRIC OXIDE OR
"NO")
L5 58 S L3 AND L4
L6 11 S L3 AND (DRYER OR DRYING OR (WATER OR MOISTURE OR
H2O) (4A) (ELIMINAT? OR ELLIMINAT? OR REMOV?))
L7 8 S L3 AND CONDENS?
L8 91 S L4 NOT L5-7
L9 16 S L8 AND COMBUST?
L10 86 S L5-7, L9
L11 64 S L10 NOT PY>2000

=> d bib, ab 1-64 l11

L11 ANSWER 1 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 135:246287 CA

TI Use of a heated sample-inlet, 2-reaction chamber **NOx analyzer** for
combustion optimization

AU McKarns, Thomas A.; Moser, Werner

CS ECO Physics, Inc., Ann Arbor, MI, 48108, USA

SO Proceedings of the Air & Waste Management Association's Annual
Conference & Exhibition, 93rd, Salt Lake City, UT, United States, June 18-
22, 2000 (2000), 5407-5413 Publisher: Air & Waste Management Association,
Pittsburgh, Pa.

AB **Combustion** optimization is key for increasing operating efficiency and
for reducing emissions. Higher **combustion** temps. lead to lower levels of
unburned hydrocarbons, but contribute to increased levels of NOx. In order
to fully characterize **NOx** emissions it is necessary to accurately **quantify**
both **NO** and **NO2** levels. Single reaction chamber **NOx analyzers** do not
correctly report rapidly changing **NO2** concns. due to their sequential
measurement of **NO** and **NOx** levels. The use of sample conditioners (to remove
moisture in the sample stream) alters the concn. of NO2 present due to the
soly. of NO2 in **water**. In order to make a correct **detn.** of the changing
concn. of **NO** and **NO2** from a **combustion** source, a new **measuring** procedure is
required. By utilizing a chemiluminescence **NOx analyzer** with heated sample-
inlet, maintained at 190 degrees C, the use of a sample conditioner is
eliminated for **moisture** contents up to 15%. Sample integrity is maintained.
A two reaction chamber design **analyzer**, simultaneously **measuring NO** in one
chamber and **NOx** (after **conversion**) in the other insures an accurate calcn.
of the NO2 concn. during changes in the **combustion** process. The NO2 concn.

is calcd. by subtracting the NO value from that of the NOx. Single reaction chamber **analyzers measure NO** first by sending the sample gas directly to the reaction chamber, then, after actuating a solenoid valve, the sample is routed through a converter to the same reaction chamber. The two measurements are made at two different points in time, so if the concns. of NO and NOx are changing with time, the calcn. of NO2 will be incorrect. Addnl., because the solenoid valve disrupts both the sample pressure and flow rate numerous errors are further introduced. With an accurate **detn.** of the **NO** and **NO2** levels, it is possible to expt. with the **combustion** conditions to optimize **combustion** efficiency while concurrently minimizing the circumstances which lead to the formation of higher NOx concns.

L11 ANSWER 29 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 126:10967 CA

TI In-situ FT-IR measurements at industrial combustion facilities

AU Bonanno, Anthony S.; Nelson, Chad M.; Wojtowicz, Marek A.; Knight, Kim S.; Serio, Michael A.; Solomon, Peter R.

CS Advanced Fuel Research, Inc., East Hartford, CT, 06108, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (1996), 2883(Optical Remote Sensing for Environmental and Process Monitoring), 611-616

AB This paper describes the development and testing of a prototype FTIR-based measurement system for continuous emission monitoring (CEM) and process control in fossil fuel-fired power plants. On several occasions, prototype systems have been transported and assembled at full-scale and pilot-scale fossil fuel-fired combustors. The in-situ version of the prototype is capable of measuring NH3 and HCl concns., which are difficult to **measure** extractively, as well as CO, CO2, **NOx**, **H2O**, and SOx concns. The results are presented of recent tests which involve in-situ **monitoring** of selective noncatalytic **redn.** (SNCR) of **NOx** based on simultaneous **measurement** of **NO**, NH3, and CO.

L11 ANSWER 42 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 110:12726 CA

TI **Measurement of nitrogen oxides** in ambient air and in **stack** gas. (3).

AU Tamaki, Motonori; Hiraki, Takatoshi

CS Hyogokenritsu Kogai Kenkyusho, Japan

SO Kankyo Gijutsu (1988), 17(6), 396-400

LA Japanese

AB The **NOx** concn. in air and from stationary sources was **detd.** by the chemiluminescence method, and the problems assocd. with the method are discussed. In the method, **NO2** was catalytically **reduced** to **NO** by a catalytic converter. The selectivity of NOx is less than desirable; there is NH3 conversion to NO and interference by **water**.

L11 ANSWER 46 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 95:191704 CA

TI An apparatus for determination of ammonia in **flue** gases

PA Seitetsu Kagaku Co., Ltd., Japan

SO Jpn. Tokkyo Koho, 5 pp.

PI JP 56032580

B4

19810729

JP 1977-3167

19770114

PRAI JP 1977-3167 A 19770114

AB NH₃ in **flue** gases (contg. **NO_x**, SO_x, O, NH₃, and **moisture**) is **monitored** by a chemiluminescence-type app. designed to convert NH₃ to **NO** for **anal.** without forming NH₄HSO₃. The SO_x is removed by sorption with soda lime, and the SO_x-free **flue** gas is divided into 2 streams. One stream passes through a Cu-Cr series catalyst at 300-450° to **convert** NH₃ to **NO₂** and **NO**, and then through a com. **redn.** catalyst to **reduce NO₂** to **NO**. This stream and the other one are analyzed and the results are compared.

L11 ANSWER 48 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 91:95830 CA

TI Analyzers for **flue** gases from incinerators

AU Kaneko, Teruo

CS Fuji Electr. Co., Hino, Japan

SO Fuji Jiho (1978), 51(12), 644-8

LA Japanese

AB **Analyzers** for HCl, **NO_x**, SO₂, CO, O, and CO₂ **flue** gas from incinerators are developed. HCl 5-2000 ppm is collected into KNO₃ soln. and detd. by ion electrode. **NO** and SO₂ 0-1000 ppm are **detd.** by a nondispersive IR **analyzer** with flow rate of 2.5 L/min. **NO₂** is **converted** to **NO**. O 0-25% is detd. by a magnetic wind-type analyzer. CO and CO₂ are also detd. by the nondispersive IR analyzer. To prevent the loss of **water-sol.** gases, a gas conducting tube between the **stack** and the analyzer is heated >120°. Fine dust particles are removed by membrane filter which is located upstream of the analyzer.

L11 ANSWER 50 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 90:209265 CA

TI Improved method for **determining** the concentration of **nitrogen oxides** in **exhaust** gases

AU Yokoyama, Kimihiko; Kira, Naruto; Watanabe, Tetsuya; Uchiyama, Haruo

CS Tech. Res. Lab., Ishikawajima-Harima Heavy Ind. Co., Ltd., Tokyo, Japan

SO Ishikawajima-Harima Giho (1977), 17(6), 574-8

LA Japanese

AB In **detg.** the concn. of **NO_x**, i.e. **NO** + **NO₂**, in **flue** gases from boilers by the chemiluminescent method, the gas was contacted at the sampling port with activated C at 240-300° to **reduce NO₂** to **NO**, thus avoiding errors due to absorption of **NO₂** by **water condensed** in the sampling line and the **moisture eliminator**. The concn. of **NO** was **detd.** after removing **NO₂** at the sampling port by contact with aq. soln. (pH 5-7) of Na₂SO₃ (10 wt.%) contg. CuCl₂ (0.1M) and NaCl (3 wt.%).

L11 ANSWER 57 OF 64 CA COPYRIGHT 2005 ACS on STN

AN 87:10596 CA

TI Some considerations in determining oxides of nitrogen in **stack** gases by chemiluminescence analyzer

AU Heyman, G. A.; Turner, G. S.

CS Beckman Instrum., Fullerton, CA, USA

SO ISA Transactions (1976), 15(3), 209-13

AB Federal regulations require the continuous **monitoring** of **NO_x** in emissions from fossil fuel-fired steam generators and HNO₃ plants. Chemiluminescence analyzers are being used for this purpose. These

analyzers contain a reaction chamber for the reaction of O₃ and NO_x, a sensitive photomultiplier tube used to **detect** the radiation produced in this reaction, a source of O₃ and a **NO₂-to-NO converter**. Sample handling requirements are specific for each installation. Requirements for the total anal. system are discussed. Wet and dry basis anal. are considered and potential interference from CO, H₂O, NH₃ and SO₂ are evaluated.

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